

Whipple Barracks (Prescott), Ariz. 5th, Greeneville, Tenn. 7th, Thornville, Mich. 9th, Lansing, Mich. 11th, Villa City, Fla. 12th, Nashville, Tenn. 13th, Villa City, Fla.; Rugby, Tenn. 14th, East Portland, Oregon. 15th, Rugby, Tenn.; Vashon, Wash. 18th, New Providence, Ind. 19th, Belle Plaine, Iowa. 21st, Rugby, Tenn. 22d, North Sutton, N. H.; Riddleton and Rugby, Tenn.; Weatherfield Centre, Vt. 23d, Berkeley and Hydesville, Cal. 24th, Greensborough, Ala.; Berkeley and Hydesville, Cal.; Lexington, Ky.; Princeton, Mo.; Riddleton, Tenn. 25th, Chattanooga, Tenn. 27th, New Providence, Ind. 28th, Kalamazoo, Mich.; Egg Harbor City and Beverly, N. J. 29th, Mansfield, Mass.; Las Vegas, N. Mex. Chattanooga, Tenn., 25th: a meteor was observed at 9.35

p. m., about 30° east of the zenith, and moving in a south-westerly direction. A bright pinkish light followed in its path, and after it had disappeared about 60° from the zenith, a pale pink color was visible for about three seconds.—*Report of L. M. Pindell, observer, Signal Corps.*

MIRAGE.

Mirage were observed as follows: Kimball and Webster, Dak., 28th; Hampton, Iowa, 10th, 11th, and 12th; Santa Fé, N. Mex., 17th and 19th.

SAND STORMS.

The only sand storms reported during the month occurred at Phoenix and Fort McDowell, Ariz., on the 6th.

VERIFICATIONS.

FORECASTS FOR 24 HOURS IN ADVANCE.

[Verifications made by Assistant Professor C. F. Marvin, assisted by Mr. H. E. Williams, chief clerk of the Forecast Division.]

The forecasts for districts east of the Rocky Mountains for September, 1889, were made by Captain James Allen, 3d Cavalry, Signal Officer, and those for the Pacific coast districts were made at San Francisco, Cal., by 2d Lieutenant J. E. Maxfield, Signal Corps.

Percentages of forecasts verified, September, 1889.

States.		States.	
Maine.....	80.5	Kentucky.....	84.6
New Hampshire.....	83.9	Ohio.....	80.4
Vermont.....	84.5	West Virginia.....	86.3
Massachusetts.....	87.1	Indiana.....	83.2
Rhode Island.....	85.8	Illinois.....	84.3
Connecticut.....	83.7	Lower Michigan.....	81.7
Eastern New York.....	82.7	Upper Michigan.....	70.6
Western New York.....	82.7	Wisconsin.....	78.7
Eastern Pennsylvania.....	82.7	Minnesota.....	82.4
Western Pennsylvania.....	80.4	Iowa.....	79.5
New Jersey.....	77.5	Kansas.....	85.0
Delaware.....	74.8	Nebraska.....	83.1
Maryland.....	76.0	Missouri.....	78.7
District of Columbia.....	76.3	Colorado.....	83.3
Virginia.....	80.5	Dakota.....	82.3
North Carolina.....	82.1	Southern California*.....	86.1
South Carolina.....	84.9	Northern California*.....	88.9
Georgia.....	85.3	Oregon*.....	88.9
Eastern Florida.....	83.9	Washington Territory*.....	84.5
Western Florida.....	89.0	By elements: Weather.....	85.5
Alabama.....	89.2	Temperature.....	78.1
Mississippi.....	87.0	Monthly percentage of weather and temperature combined.....	82.5
Louisiana.....	89.3		
Arkansas.....	77.3		
Tennessee.....	82.5		

* In determining the monthly percentage of weather and temperature combined, the Pacific coast states are not included. † The monthly percentage of weather and temperature combined is determined by multiplying the percentage of weather by 6, and the percentage of temperature by 4, and dividing their sum by 10. ‡ The forecasts of temperature in districts east of the Rocky Mountains for September, 1889, were made with reference to the maximum temperature alone; that is, a prediction of warmer or cooler indicated that the maximum temperature of the day designated would be higher or lower than the maximum of the previous day.

FORECASTS FOR 48 AND 72 HOURS IN ADVANCE.

Appreciating the great importance that long time predictions possess for the general public, the Chief Signal Officer has authorized forecasts for forty-eight and seventy-two hours, covering the second and third day in advance. Such forecasts are optional with the predicting officer, and are only made when clearly in the public interest, and cover, in all cases, considerable areas of country, and are not confined to localities.

Percentages of verifications of forecasts made for second day in advance. Number of predictions made: weather, 38;

temperature, 44. Percentages of verifications: weather, 73.2; temperature, 83.9. Weather and temperature combined, 78.4.

Percentages of verifications of forecasts made for third day in advance. Number of predictions made: weather, 13; temperature, 7. Percentages of verifications: weather, 97.7; temperature, 35.9. Weather and temperature combined, 81.3.

FORECASTS FOR 48 AND 72 HOURS IN ADVANCE, FOR AUGUST, 1889.

[Made by Capt. H. H. C. Dunwoody.]

Percentages of verifications of forecasts made for second day in advance. Number of predictions made: weather, 24; temperature, 36. Percentages of verifications: weather, 71.7; temperature, 94.4. Weather and temperature combined, 80.8.

Percentage of verifications of forecasts made for third day in advance. Number of predictions made: weather, none; temperature, 8. Percentage of verifications: temperature, 100.

CAUTIONARY SIGNALS FOR SEPTEMBER, 1889.

Statement showing percentages of justifications of wind signals for the month of September, 1889:

Wind signals.—(Ordered by Captain James Allen.) Total number of signals ordered, one hundred and fifty-five; justified as to velocity, wholly, ninety-five, partly, ten; justified as to direction, one hundred and fifty-one. Of the signals ordered, one hundred and fourteen were cautionary, of which seventy-three were wholly, and two partly, justified; and forty-one were storm signals, of which twenty-two were wholly, and eight partly, justified. Seventy-one signals were ordered for easterly winds, of which sixty-seven were justified, and eighty-four were ordered for westerly winds, all of which were justified. Percentage of justifications, 71.6.

Cold-wave signals.—(Ordered by Assistant Prof. T. Russell.) Two cold-wave signals were ordered during the month, neither of which were justified.

Percentages of local verifications of weather and temperature signals reported by directors of the various State Weather Services for September, 1889.

States.	Weather.	Temperature.	States.	Weather.	Temperature.
Illinois.....	74.6	80.1	Missouri.....	82.0	85.0
Indiana.....	80.0	83.0	Nebraska.....	88.0	85.9
Kansas.....	92.7	89.8	New Jersey.....	89.0	92.5
Louisiana, northern.....	68.0	96.0	New York.....	79.0	82.0
Louisiana, southern.....	64.0	92.0	Ohio.....	79.0	85.0
Michigan.....	86.1	82.8	Pennsylvania.....	88.0	89.0
Minnesota.....	76.0	73.0	South Carolina.....	86.4	84.6

STATE WEATHER SERVICES.

[Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.]

The following extracts are republished from reports for September, 1889, of the directors of the various state weather services:

ALABAMA.

The temperature was below the normal. Light frost occurred on the 19th, 20th, and 28th, but caused no damage to vegetation.

The rainfall during the month was not uniformly distributed over the state. In north Alabama the precipitation was large and showers were constant during the month; in middle Alabama there was a deficiency of rain, and in

many sections wells have almost run dry, while along the Florida line the precipitation has been more frequent. The average rainfall for the state was 1.44 above the normal; this increase over the normal was due to the excessive rains throughout north Alabama.

SUMMARY.

Temperature.—Monthly mean, 73.6; highest monthly mean, 80.8, at Wiggins; lowest monthly mean, 66, at Valley Head; maximum, 99.5, at Citronelle, 16th; minimum, 36, at Valley Head, 20th and 28th; range for state, 63.5; greatest local monthly range, 53, at Valley Head; least local monthly range, 40, at Mobile.

Precipitation.—Average for the state, 4.51; greatest, 8.83, at Elkmont; least, 1.22, at Livingston.

Wind.—Prevailing direction, north.—*P. H. Mell, Signal Corps, Auburn, director.*

ARKANSAS.

SUMMARY.

Temperature.—Monthly mean for the state, 70.7; highest monthly mean, 74.8, at Texarkana; lowest monthly mean, 65.8, at Ozone; maximum, 96, at Paris, Texas, 1st and 2d; minimum, 40, at Devall's Bluff, 29th, and at Lead Hill, 26th; range for state, 56; greatest local monthly range, 54, at Devall's Bluff and Lead Hill.

Precipitation.—Average for the state, 4.70; greatest monthly, 8.64, at Newport; least monthly, 1.83, at El Dorado.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; W. U. Simons, Sergeant, Signal Corps, assistant.*

COLORADO.

SUMMARY.

Temperature.—Monthly mean for the state, 54.3; highest monthly mean, 64.3, at Cañon City; lowest monthly mean, 41.8, at Climax; maximum, 101, at Las Animas, 1st; minimum, 8, at Breckenridge, 25th; monthly range, 93.

Precipitation.—Average for the state, 0.62; greatest monthly, 1.31, at Palmer Lake; least monthly, 0.06, at Las Animas.—*Prof. F. H. Loud, Colorado Springs, director; T. W. Sherwood, Sergeant, Signal Corps, assistant.*

DAKOTA.

SUMMARY.

Temperature.—The average temperature for the state, 56, is about the normal. Highest monthly mean, 61, at Yankton; lowest monthly mean, 52, at Walsey; maximum, 100, at Onida, 1st; minimum, 22, at Steele, 26th; range, for state, 78; greatest daily range, 53, at Valentine, Nebr.; least daily range, 4, at Bismarck and Yankton, and at Saint Vincent, Minn.

Precipitation.—The average for the month, 2.85, is about 1.13 above the normal; greatest monthly, 6.25, at Alexandria; least monthly, 0.37, at Rapid City. The principal precipitation of the month occurred on the 12th, 13th, and 14th.—*S. W. Glenn, Sergeant, Signal Corps, Huron, in charge.*

ILLINOIS.

SUMMARY.

Temperature.—Monthly mean for the state, 63.1; maximum, 98, at Quincy, 3d; minimum, 27, at Riley, 27th; mean of maximum temperatures, 90.1; mean of minimum temperatures, 35.1; monthly mean of maximum and minimum temperatures for the state, 64.7.

Precipitation.—Monthly average for the state, 3.74.

Wind.—Prevailing direction, southeast.—*John Craig, Sergeant, Signal Corps, Springfield, in charge.*

INDIANA.

SUMMARY.

Temperature.—The monthly mean temperature for September, 1889, is 1.7 below the normal; that of September, 1888, being the only one which was lower during the past eight years. The highest temperature was noted at most stations on the 1st, and the lowest on the 22d; the range being quite large. Warmer periods occurred only during the first half of the month; from the 1st to 4th, and from the 9th to 15th. The greatest deficiency in temperature is noted in the northern portion, 3.0, and 2.9 in the southern portion, while the deficiency in the central portion was only 1.4. Hoar frost formed frequently in all sections, but caused no marked injury to vegetation.

Precipitation.—The average amount of precipitation for the state is 0.84 in excess of the normal; that in the southern portion is 1.56, and in the central portion, 0.65 in excess, while that in the northern portion is 0.81, deficient, La Fayette alone, in the northern portion, reporting an excess of the normal. Rain was not so very frequent during the month, but large amounts fell on some days; the greatest in twenty-four hours being 5.00, reported for Huntingburgh, and the next largest, 3.30, from Princeton, both stations being in the extreme southwest portion of the state. The weather was very favorable to all farm work.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Sergeant, Signal Corps, assistant.*

IOWA.

September, 1889, was cool and fair; southerly and westerly winds prevailing. The rainfall was generally less than the normal. The mean temperature of the air was almost 1 below the normal. The first decade was warm, being 2.5 above the normal; the second and last decades were cold, being as much below the normal. The most notable spell extended from the 16th to the 21st, and averaged 10 below the normal. The 13th and 14th were the warmest days, exceeding the normal by 12.

The total rainfall in most of the northwestern third of the state was decidedly below the normal, averaging less than 1.00. In southeastern Iowa, from Wayne to Linn counties, and east to the great river the rainfall was above the normal, averaging about 4.00 and exceeding 7.00 in Keokuk, Washington, and Louisa counties; in this belt the rainfall exceeded 3.00 on the 12th. In the broad belt between these two extreme regions the rainfall was about normal. No severe winds occurred during the month.—*Dr. Gustavus Hinrichs, Iowa City, director.*

IOWA WEATHER CROP BULLETIN SERVICE.

The first three days of the month brought a general excess of temperature, followed on the 4th and 5th by a cool wave, with light frost on the morning of the 5th, which, however, caused no damage to crops. The cool wave continued until the 10th, and from that date until the 15th, the temperature was comparatively high. The temperature during the last half of the month was below the normal, bringing general frosts from the 16th to 28th, inclusive, the minimum occurring on the 27th. There was a general deficiency of rainfall, except in the southeastern portion of the state, where an excess occurred, especially in Washington county, where the total for the month amounted to 7.19, at Washington.

SUMMARY.

Temperature.—Monthly mean, 61.4; highest monthly mean, 66.5, at Mount Vernon; lowest monthly mean, 56.6, at Wesley; maximum, 94, at McGregor, 1st; minimum, 23, at Fayette, 27th; average maximum, 87.8; average minimum, 30; greatest local monthly range, 67, at McGregor and Fayette; least local monthly range, 49, at Sioux City; monthly range for the state, 71; average monthly range, 57.4.

Precipitation.—Average for the state, 2.76; greatest, 7.19, at Washington; least, 0.30, at Esterville.

Wind.—Prevailing direction, southwest.—*G. M. Chappel, Sergeant, Signal Corps, Des Moines, in charge, Iowa Weather Crop Bulletin Service.*

KANSAS.

The month of September has been characterized by warm noons and cool nights, and has been an unusually cool September. Four rain-waves crossed the middle and eastern divisions, while the western was affected by but three, and then not generally. Two cold waves crossed the state, following the rain-waves of the 4th and 24th. The drought in the southeastern counties during August has been completely washed out by the abundant rains that have visited that section this month.

SUMMARY.

Temperature.—The temperature is deficient over the entire state, the deficiency being greatest in the eastern division, where it amounts to from 2.0 to 4.7. This deficiency uniformly diminishes toward the west. The highest and lowest temperatures recorded in the state occurred in the western division, yet the greatest local range of temperature occurred in the western part of the eastern division.

Precipitation.—The average rainfall for the state is 1.90. It has been very unequally distributed, the southeastern counties receiving the major portion, while some counties in the central and western divisions received none. The rainfall is normal from Doniphan to the southeastern part of Pottawatomie; thence through the central part of Morris; thence to the southeast corner of Chase; thence southwest to and through Sumner, east and south of Wellington. East of this line there is an excess which culminates in Chautauqua, where it amounts to 4.44, but then diminishes east and north, being 3.46 in Montgomery, and dropping to 1.31 in Shawnee, 1.58 in Douglass, and 2.23 in Leavenworth. West of the normal line there is a deficiency which culminates in Rooks, Ellis, western part of Russell, and extends southwest through Rush, Ness, Lane, and Scott, where no rain fell during the month. This occurred also in the western part of Stafford, and western parts of Wallace and Sherman. A local excess occurs in the western part of Reno.

Wind.—Prevailing direction, south.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Sergeant, Signal Corps, assistant.*

KENTUCKY.

SUMMARY.

Temperature.—The average temperature of the state for the month, as deduced from the tri-daily observations, was 65.3; from the mean of the average maximum and average minimum temperatures, 66.9. These figures show a departure of about 2 below the normal. The highest temperature reported was 97 at Pellville on the 13th, and the lowest, 36, at Murray on the 28th. The average monthly range of temperature was 50.2; the greatest, 55.5, at Shelbyville, and the least, 38, at Franklin.

Precipitation.—The average precipitation of the state for September was 5.12 inches, which is about two inches in excess of the normal amount. The greatest rainfall reported was 8.24 at Owenton, and the least, 2.47, at Mt. Sterling. The rainfall was very evenly distributed throughout the state, a large portion of it falling between the 1st and 7th. The average number of rainy days was 8.

At Louisville on September 30th the total amount of rainfall since January 1st was 10.77 less than the normal.

Wind.—Prevailing direction, south.—*Dr. E. A. Grant, Louisville, director; Frank Burke, Sergeant, Signal Corps, assistant.*

LOUISIANA.

There was an average deficiency of nearly one degree in the mean temperature of September, 1889, for the state of Louisiana, and this deficiency was

maintained in both the northern and southern sections. The first few days and the period from the 11th to the 16th were unusually warm, and the latter period was followed by a cool wave of considerable severity, the temperature falling to 44 in the central parishes, and to from 58 to 62 in the Gulf parishes. There was an average rainfall of but 1.65 in the northern section, which was 2.85 below the normal of the past twenty years. The average amount received in the southern section was 2.98, a deficiency of 1.47 as compared with a twenty-year normal. The rain in northern Louisiana fell between the 1st and 10th, generally, and after the latter date there was but an occasional light shower here and there. In southern Louisiana there were three periods of rain, the first being from the 1st to 7th, the second on the 17th, and the third from the 23d to 26th. The amount that fell during the latter rainy spell was more than the total fall of the remaining dates.

SUMMARY.

Temperature.—Monthly mean, 76.2; highest monthly mean, 80.2, at Port Eads; lowest monthly mean, 73.2, at Natchitoches; maximum, 110, at Cameron, 5th; minimum, 44, at Marksville and Cheneyville, 19th; range for the state, 66; greatest local monthly range, 52, at Vidalia and Cheneyville; least, 28, at Shell Beach and Port Eads; mean daily range, 21.2.

Precipitation.—Average for the state, 2.47; for the northern section, 1.73; southern section, 2.98; greatest local monthly rainfall, 6.80, at Houma; least, 0.33, at Alexandria.

Wind.—Prevailing direction, south.—*R. E. Kerkam, Sergeant, Signal Corps, New Orleans, in charge.*

MICHIGAN.

The features of the month were the high temperatures of the first part of the month, and the low temperatures of the last half, with killing frost on the 22d and 27th, and the continued drought in the southern half of the state.

SUMMARY.

Temperature.—The mean temperature for the month, 59.9, is 1.0 below the normal. The temperature was above the normal on twelve days, normal on one, and below the normal on seventeen days. The highest mean daily temperature, 72, occurred on the 3d, when the temperature was 7 above the normal, and the lowest, 45, occurred on the 21st and 27th, when the temperature was 15 and 13, respectively, below the normal. The highest mean daily temperature in the past fourteen Septembers, 77, occurred on the 1st, 1880, and the lowest, 42, occurred on the 28th, 1888. The highest mean monthly temperature, 68.4, occurred in 1881, and the lowest, 56.7, in 1888. The maximum temperature for the month, 95, occurred on the 9th, at Highland station, and the least, 20, on the 6th, at Evart, and on the 22d, at Hart. Temperatures above 90 were generally reported in the southern half of the state on the 2d. Frosts were reported from the 14th to the 29th in different portions of the state, and those of the 22d and 27th were killing, and that of the 22d did considerable damage to corn and vines.

Precipitation.—The average rainfall for September, 1.98, is 1.24 below the average of fourteen years. The rainfall was below the average in all sections, from 0.48 in the upper peninsula to 1.83 in the central section. The rainfall in the upper peninsula, east of Alger and Schoolcraft counties, was above the average from 0.12 to 1.18. In the northern section of the counties of Alpena, Alcona, Iosco, Arenac, and the counties directly west of Arenac, the rainfall was below the average from 1.00 to 2.00, while the other counties in this section received more than the average rainfall for this month. In the central section, the counties of Allegan, Kent, Ottawa, and west portion of Barry, received rainfall nearly up to the average, while all counties east of the ones named received a rainfall that was over 2.00 below the average. In the southern section the rainfall was below the average in all counties. The largest amount recorded during the month, 5.60, occurred at Sault Ste. Marie, and the least, 0.46, at Port Huron. The drought has been most severe in the counties of Saint Clair, Macomb, Lapeer, Oakland, eastern portions of Genesee and Livingston, northern portions of Wayne and Washtenaw, where the amount of rainfall has been about fifty per cent. of the average. The heaviest rainfall recorded in the past fourteen Septembers, 5.39, occurred in 1879, and the least, 1.63, in 1882. The least amount of rainfall in the central and southern sections was recorded in 1882, and in the northern section in 1887.

Wind.—Prevailing direction, southwest.—*N. B. Conger, Sergeant, Signal Corps, Lansing, director.*

MINNESOTA.

As shown by reports from stations having the longest records, the departure from the normal temperature was only slight, there being a deficiency of less than 1.0. In the counties of the Red River Valley the rainfall for the month was much in excess of the usual amount; the departure being greatest at Moorhead, where the deposit was more than 200 per cent. in excess. In all other districts of the state the rainfall was deficient, notably so in the southern-central portion, which received less than one-sixth of the usual amount.

SUMMARY.

Temperature.—Monthly mean, 55.8; highest monthly mean, 60.6, at La Crosse, Wis.; lowest monthly mean, 50.4, at Pokegama Falls; maximum, 94, at Saint Vincent and Moorhead, 1st; minimum, 21, at Pokegama Falls, 21st; range for state, 73; greatest local monthly range, 66, at Saint Vincent; least local monthly range, 40, at Duluth; greatest daily range, 48, at Saint Vincent, 4th and 24th; and the same at Duluth, on the 10th.

Precipitation.—Average for the state, 2.09; greatest monthly, 6.27, at Moorhead; least monthly, 0.51, at Saint Paul.

Wind.—Prevailing directions, south and southwest.—*John Healy, Private, Signal Corps, Saint Paul, in charge.*

MISSISSIPPI.

SUMMARY.

Temperature.—The month showed to a marked degree the changes in temperature denoting the approach of cold weather. On the 1st the mean temperature in all parts of the state was 78. On the 6th and 7th it fell from this value to 70. This slight depression was followed by a gradual rise until the 16th, when the maximum of the month was reached, the mean daily being 84 in the southern part and 82 in the northern. After the 16th a gradual fall occurred, reaching a mean of 60 or less on the 19th and 20th. The temperature then rose irregularly to another culmination on the 24th and 25th, reaching 77. Succeeding this there was a decline to about 59 on the 28th, and a rise to 75 on the 30th. Thus there was but little fluctuation during the first half of the month and an unusual disturbance of temperature during the latter half. The mean of the month was 73.4, 1 below the normal for September. The daily range of temperature varied considerably according to date and locality. The least was 3, at University, 17th, and the greatest, 39, at Louisville, 15th. The greatest local monthly range was at Louisville, from 102 on the 15th to 39 on the 20th, and the least monthly range at Pearlinton, from 91 on the 14th to 59 on the 20th. The highest monthly mean temperature was 77, at Louisville, and the lowest, 68, at Aberdeen.

Precipitation.—The average number of days on which rain fell was six. The average amount for the state was 2.70, which was 1.11 less than the normal amount. This deficiency added to that at the beginning of the month makes the deficiency, since January 1st, 10.19. The rainfall was very unequally distributed, eleven stations reporting less than 1.00, and 17 stations more than 3.00. The heaviest rainfalls were, at Meridian, 3.27 (in one hour and forty minutes), 5th; at Loch Leven, 3.60, 6th; at Holly Springs, 2.80, 6th; at Greenville, 1.88 (within two hours), 16th; at Rienzi, 0.59 (in twenty minutes), 11th, and near Rienzi over 2.00, 2d; at Mobile, Ala., 2.72, 23d, and an unmeasured very heavy fall near Fayette, 25th.—*R. B. Fulton, Signal Corps, University, director.*

MISSOURI.

September, 1889, has been slightly cooler than the average, and over a greater part of the state an excess of rain has fallen.

SUMMARY.

Temperature.—The average at the central station, 67.1, is about 2 below the normal; highest maximum, 90.3, 14th; lowest minimum, 42.3, 27th. During the last fifty years the temperature has fallen to 40.5 as early as September 17th, in 1863; the lowest September temperature, 35, occurring September 30th, 1851. During fifty years the highest maximum has during some year or other risen to or above that of last month on every day of the month, excepting the 15th and 27th. In September, 1858, the temperature rose to 90 as late as September 30th.

Precipitation.—The greatest rainfall has occurred in an area bounded by a line drawn through Kansas City eastward to Mexico, thence westward through Boonville to Harrisonville, Cass Co. In this area the precipitation has been over 7.00. The maximum fall was 9.23, at Glasgow. To the northward the rainfall diminished to less than 4.00, while in the southern part of the state the fall was about 2.50. The rainfall was normal along a line running nearly eastward through Nevada, Rolla, Saint Genevieve, and thence southward to Charleston. South and west of this line the rainfall was less than the average for ten years ending 1887, the deficiency amounting to 2.4 at Lamar, where the normal September rainfall is 4.40. The excess of rainfall during last month was greatest, exceeding 3.00, over a narrow belt which includes Pleasant Hill, Glasgow, Mexico, and Louisiana. This belt traverses the region where the September rainfall is normally most abundant. The greatest excess was 5.00, at Glasgow, where the normal is 4.2. The heaviest rainfall of the month at the central station was 3.05 on the 5th.—*Prof. Francis E. Nipher, Saint Louis, director.*

METEOROLOGICAL REPORT OF THE MISSOURI STATE BOARD OF AGRICULTURE.

SUMMARY.

Temperature.—Mean temperature for the state, 56.4; maximum, 94, at Sedalia and Protem; minimum, 32, at Columbia and Steelville. The highest mean daily temperature was 70, at New Haven, and the lowest, 61.2, at Oak Ridge. The greatest monthly range of temperature, 59, occurred at Sedalia, and the least, 40, at New Haven. The first frost of the season occurred at Princeton, on the 16th, and light frost was quite general on the 19th, 26th, and 27th.

Precipitation.—Average for the state, 4.73; greatest monthly, 7.73, at Kansas City; least monthly, 2.01, at Springfield.—*Levi Chubbuck, Secretary of State Board of Agriculture, Columbia, director; A. L. McRae, Sergeant, Signal Corps, assistant.*

NEBRASKA.

The month of September has been a cool, dry month, with less than the normal number of rainy days.

SUMMARY.

Temperature.—The mean temperature for southern Nebraska was 61.6, which is about 3.0 below the normal; the month, however, was one of ex-

tremes, several days reaching 100, which is unusual for September, while the minimum for the month, 24, is also considerably lower than usual. Slight frost occurred on several days, but the first killing frost did not occur till near the end of the month, except in the northwestern portion of the state, where it occurred on the 6th. This is about the average date for the first killing frost.

Precipitation.—The rainfall for the month has varied from a small fraction of an inch in the western portions of the state to over three inches in parts of the eastern portions, reaching a maximum of 3.70 at Creighton. The number of cloudy days was about nine, or nearly double the usual number.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Corporal, Signal Corps, assistant.*

NEVADA.

SUMMARY.

Temperature.—September was an exceedingly dry and comparatively cool month. There was an average of twenty-three cloudless, four partly cloudy, and four cloudy days. The mean temperature for the state, as deduced from twenty-three monthly reports, 61.7, is nearly 5 below the normal, and about 10 below that of the same month last year. El Dorado Cañon reported the highest temperature, 110, on the 6th, and also the highest mean maximum temperature, 97.4. The lowest temperature for the month, 13, occurred at Elko, which station reported also the lowest mean minimum temperature. There were two warm periods during the month, the first from the 3d to the 7th, inclusive, and the second from the 28th to the 30th, inclusive, and two cold periods, from the 11th to 14th, and 22d to 24th, respectively. The atmosphere was smoky and hazy in many portions of the state, owing to extensive forest fires which were raging during the month, causing a great loss of timber. Frosts were reported from a number of stations throughout the state on the 12th, 13th, 14th, 24th, and 25th, doing little damage to vegetation.

Precipitation.—Excepting a few favored localities, the effects of the terrible and long-continued drought were felt all over the state during the month. Rain fell this year at only 7 out of a total of 24 stations, principally in Elko, White Pine, Nye, Esmeralda, and Lincoln counties, while this month last year rain was reported from 23 out of 24 stations, and was well distributed. There were no general or extensive storms during the month. On the 19th and 20th thunder-storms, accompanied with rain, occurred in the above named counties. Many mills have shut down, owing to the scarcity of water in rivers all over the state, and will remain so until November unless heavy snow storms occur before then. The average rainfall per station was 0.55. The largest amount of precipitation which fell at any one station during the month was 2.00 at Pioche. No snow fell during this month.—*Prof. Chas. W. Friend, Carson City, director; H. F. Alcatorre, Private, Signal Corps, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

New England weather during September was not characterized by any well-marked general peculiarities; the average temperature was about the normal, from which there were no wide deviations. The first general frost of the season, which was severe at only a few isolated stations, occurred on the 23d, about a week later than usual. In the northern part of the district there were fifteen days on which no precipitation occurred, giving a deficiency of about 0.75 in the amount for that region, while in the southern part rain fell on all but ten days, and the amount was about 1.00 in excess of the normal.

SUMMARY.

Temperature.—Monthly mean, 59.3 (110 stations); highest monthly mean, 65.7, at Olneyville; lowest monthly mean, 51.0, at Weathersfield Centre; maximum, 90, at Stratford, 4th; minimum, 17, at Weathersfield Centre, 28th; range for New England, 73; greatest local monthly range, 63, at Weathersfield Centre; least local monthly range, 25, at Block Island; greatest daily range, 47, at Stratford, 25th; least daily range, 0, at Walpole, 19th. The average temperature for September for 24 stations, having records for more than ten years, is 60.3; the average for September, 1889, is 61.3; departure, +1.0.

Precipitation.—Average for New England, 4.11 (138 stations); greatest, 7.07, at Voluntown; least, 1.65, at Bar Harbor. The average precipitation for September, for 34 stations, having records for more than ten years, is 3.35; the average for September, 1889, is 3.90; departure, +0.55.

Wind.—Prevailing direction, northeast.—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; L. G. Schultz, Sergeant, Signal Corps, assistant.*

NEW YORK.

SUMMARY.

Temperature.—The highest temperature reported was 91, at Utica, 4th; lowest 27, at Number Four, 23d; mean for the state, 60.4—the 5th being the hottest and the 22d the coldest day. The greatest local monthly range of temperature was 59, at Utica, and the least, 33, at Setauket. The temperature was generally above the normal, excepting at Albany, where it was 1.1; Canton, 2.9 below, and at Central Park (New York City), Factoryville, Ithaca, North Hammond and Oswego, it was but slightly below; at Ardenia the temperature was normal.

Precipitation.—Average for the state, 4.02. The rainfall was generally above the average, excepting at Humphrey, where it was 0.66 below, and along Lake Ontario, from Rochester to Saint Lawrence county, where it was below the normal. The greatest monthly rainfall was 8.12, at Tannersville, and the least was 1.82, at Alfred Centre. Average number of rainy days, 12.

Wind.—Prevailing direction, south.—*Prof. E. A. Fuertes, Ithaca, director; I. W. Brewer, Private, Signal Corps, assistant.*

NEW JERSEY.

SUMMARY.

Temperature.—The mean temperature for September, 1889, 64.8, is 0.5 below the average for the month, and 1.7 above the average for the corresponding month of 1888. The warmest days of the month were the 1st, 2d, 3d, 5th, and 6th, and the coolest the 19th, 20th, 22d, 23d, and 29th. Light harmless frosts occurred on the mornings of the 21st, 22d, and 23d.

Precipitation.—The average precipitation for the state, 8.86 is 4.47 above the average determined from past records of forty-nine stations, and 1.27 above the average for the corresponding month of 1888. One station reported a total exceeding 13.00, two exceeding 11.00, four exceeding 10.00, four exceeding 9.00, five exceeding 8.00, four exceeding 7.00, five exceeding 5.00, one exceeding 4.00, and two exceeding 3.00.

Wind.—Prevailing direction, northeast.—*E. W. McGann, Sergeant, Signal Corps, New Brunswick, in charge.*

NORTH CAROLINA.

The chief meteorological feature of the state for the month was the deficiency in temperature. The weather, however, was generally favorable to the growth of crops. The temperature was generally highest about the 16th and lowest on the 22d. The first light frost of the season occurred on the 19th.

SUMMARY.

Temperature.—The monthly mean for the state, 68.4, is 3.0 below the normal; maximum, 90, at Southern Pines, 16th; minimum, 30, at Highlands, 27th; range for state, 60; highest monthly mean temperature, 72, at Wilmington; lowest monthly mean temperature, 58.4, at Highlands; average monthly range, 42.8; average daily range, 16.5; least monthly range, 26, at Hatteras; greatest monthly range, 52, at Mount Airy.

Precipitation.—The monthly average for the state, 4.50, is 0.17 above the average. The rainfall was below the average in the eastern portion and above the average in the western portion of the state. The greatest monthly rainfall, 10.69, occurred at Lynchburgh, Va.; least, 1.68, at Raleigh.

Wind.—Prevailing directions, north and northwest; average direction, as deduced from many years observation, northeast.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Hermann, Sergeant, Signal Corps, assistant.*

OHIO.

SUMMARY.

Temperature.—The mean temperature of the northern section was 61.9; of the middle section, 62.7; of the southern section, 64.1; and of the state, 62.9. These means are 0.4, 1.1, 1.1, and 0.9 below the average for the sections and state. The maximum temperature was 98.5, at Georgetown, 1st. This is the highest temperature on record for September since the opening of the bureau. The minimum temperature, 27.6, occurred at Wauseon, 22d. The mean daily range of temperature was 21.1. The greatest daily range was 46.5, at Wauseon, 24th, and the least daily range, 4, at Georgetown, 16th; Cleveland, 17th; and at Jefferson, 20th and 30th. The first light frost of the season was reported by Wauseon, on the 7th, and from stations in all sections on the 18th to the 23d, 27th, and 28th. Heavy frost was reported by Findlay and Yellow Springs on the 21st, 22d, and 27th; by Wapakoneta, Wauseon, and Tiffin on the 21st and 22d; by Sidney on the 21st; Ottawa on the 22d.

Precipitation.—Precipitation was general and heavy in all sections on the 3d, 4th, 5th, 15th, 16th, 17th, 20th, 25th, and 30th; in the northern section on the 18th and 19th, and in the southern section on the 2d and 24th. Local rains occurred in all sections on the 6th, 26th, and 29th, and in the northern section on the 21st and 27th. The mean rainfall in the northern section was 3.57, in the middle section 3.88, and in the southern section 3.96. These means are 0.49, 0.21, and 1.22 above the seven-year averages for the sections. The mean for the state, 3.63, is 0.63 above the average.—*Prof. B. F. Thomas, Columbus, director; Lieut. Charles E. Kilbourne, secretary; C. M. Strong, Corporal, Signal Corps, assistant.*

PENNSYLVANIA.

SUMMARY.

Temperature.—The mean temperature for the month, deduced from the reports of fifty stations was 61.9, which is about 1 above the normal, and 2 above that of September, 1888. The greatest departures were in the southeastern part of the state. The means of the daily maximum and minimum temperatures were 70.8 and 53.0, respectively, making a daily mean of 63.9, and an average daily range of 17.8. The highest temperatures recorded were Columbus, 92; Lebanon, 91; Petersburg, Greenville, New Castle, and Pittsburgh, 90. The lowest were Philipsburgh, 30; Clarion, New Castle, Petersburg, Coudersport, Columbus, and Dyberry, 31. The highest temperature occurred on the 1st and 2d and the lowest on the 23d. Frost was general on the 23d. Stations with the highest monthly averages were Meyerstown, 68.7; Philadelphia, 66.4; Pottstown, 65.0; and Uniontown, 64.9. The lowest averages were Dyberry, 57.2; South Eaton, 57.5; Philipsburgh, 57.7; Eagle's Mere, 58.2; and Wellsborough, 58.4.

Precipitation.—The average precipitation for the state, 5.05, is an excess of 1.50. The greatest departures were in the eastern part of the state, where the following totals were reported: Kennett Square, 10.01; West Chester, 9.95; Eagle's Mere, 9.95; Coatesville, 9.12; Forks of Neshaminy, 8.76; and Doylestown, 8.61. The smallest totals were Wellsborough, 2.71; Altoona, 2.74; Grampian Hills, 2.76; Emporium, 2.84; and Somerset, 2.94. The heavy rains, from the 10th to the 15th, did not extend to the extreme western part of the state. A few stations reported light snow on the 19th, 20th, and 21st.

Wind.—Prevailing direction, west.—Under direction of the Franklin Institute, Philadelphia; T. F. Townsend, Sergeant, Signal Corps, assistant.

SOUTH CAROLINA.

SUMMARY.

Temperature.—The mean temperature for the month, 72.1, is 0.8 above the normal for the last three years. Highest monthly mean, 76.0, at Charleston; lowest monthly mean, 67.2, at Camden; maximum, 98, at Chester, 16th; minimum, 40, at Cedar Springs, 19th and 22d; range for state, 58. In most instances the highest maximum temperature occurred on the 15th and 16th and the minimum on the 19th and 20th.

Precipitation.—The average precipitation for the state, 3.34, is 1.42 below the normal for the last three years; greatest monthly, 7.37 at Walhalla; least monthly, 1.46, at Florence; greatest daily, 3.85, at Conway, on the 24th. Average number of rainy days, 5.2.

Wind.—Prevailing direction, southeast.—Hon. A. P. Butler, Columbia, director; H. C. Seymour, Private, Signal Corps, assistant.

TENNESSEE.

The principal meteorological feature for September was the unusual amount of rainfall. The temperature was very near the normal—slightly below. There were but few electrical disturbances—none very severe, and no high winds. The month, altogether, was rather a pleasant one, and very favorable for the farmer.

SUMMARY.

Temperature.—The mean temperature was 67.4, a little below the average September mean during the past seven years. The highest monthly mean was 75, at Bolivar, and the lowest was 62.6 at Fostoria. The maximum temperature was 95, on the 10th and 12th at Leeville, and on the 14th and 15th at Bolivar. The minimum temperature was 34.5, on the 28th at Lawrenceburgh. The maximum temperature was generally recorded on the 15th and 16th, and the minimum, with few exceptions, on the 28th. The daily ranges of temperature were generally less than the normal.

Precipitation.—The average depth of rainfall was 5.94, a remarkable amount for September, being more than 2.50 above the average September rainfall for the past seven years. Of this amount the eastern division received much the largest portion, being an average of nearly 7.00. The middle division received an average of about 5.33, and the western division an average of a little more than 5.00. During the first five days of the month the rains were continuous, culminating on the 5th with a very heavy rainfall, averaging for the entire state more than 1.50. The next heavy rainfall began in the western division on the 15th, and ended on the 17th in a general heavy rain. From the 17th to the 30th there was but little rain, principally in the eastern division, where heavy local rains were reported. In the extreme eastern part of the state the rainfall was generally light, and the least monthly amount is reported at Greeneville, while in the central and lower portions of that division the rainfall was remarkably heavy—the greatest amounts being reported at Clinton, 9.91; Kingston, 9.63; Loudon, 8.30; Andersonville, 8.58; Grief, 8.60; Dunlap, in Sequachee Valley, 8.69; Jacksboro, 7.64; Chattanooga, 7.87; Rockwood, 7.43; Charleston, 7.37; and other large amounts at various stations in that section of the state. The greatest local daily rainfall was 4.58 on the 16th at Andersonville, but perhaps the greatest local falls were at Nunnally, on the 5th, where 4.20 fell in the space of eleven hours, and at Trenton, on the same day, where 3.44 fell in the space of twelve hours. Other heavy local daily falls are reported, as on the 2d at Bolivar, 2.80; on the 4th at McKenzie, 3.00; on the 5th at Cog Hill, 2.00; Grief, 4.00; Chattanooga, 2.02; Kingston Springs, 2.56; Clarksville, 2.02; Savannah, 2.32; Bolivar, 2.50; Covington, 2.48; on the 6th, Lookout Mountain, 2.25; on the 16th, Kingston Springs, 3.75; on the 17th, Springdale, 3.65; Jacksboro, 2.23; Rugby, 3.31; Dunlap, 3.21; Watkins, 2.25; Hohenwald, 2.62; on the 23d, Grief, 2.00; Dunlap, 2.09. There were nine days of general rains during the month, and about eight of local rains. Frosts occurred on eight days, all of them light, except that of the 28th, which did a small amount of damage.

Wind.—Prevailing direction, north and northwest.—J. D. Plunket, M. D., Nashville, director; H. C. Rate, Signal Corps, assistant.

TEXAS.

SUMMARY.

Temperature.—The mean temperature for the month of September was below the normal in all parts of the state, but the most marked deficiency occurred over the central portion, where in some localities it amounted to 6, and the smallest over the Panhandle and extreme western portion of the state, where it was from 1 to 2. The average temperature for the month over the state was 72, which is 3 below the 15-year normal. The highest temperature reported was 102, at Hartley, 9th, and the lowest, 32, from the same place, 25th. The temperature over the state was high during the first few days of the month, but after the 10th the weather was cool for the season, and a marked cool wave passed over the state from the 23d to the 27th.

Precipitation.—The rainfall during the month was unusually heavy east of the one-hundredth meridian; the amount over that section of the state being from 2.00 to 6.00 in excess of the 18-year normal. Over the western portion the precipitation was about normal. The number of dates on which rain fell during the month was unusually great over the entire state, and particularly over the eastern and southern portions, where it occurred quite generally on from ten to fifteen days. Three inches of snow fell at Folsom in the northwestern part of Panhandle on the 23d.—D. D. Bryan, Galveston, director; I. M. Cline, Sergeant, Signal Corps, assistant.

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, September, 1889.

Stations.	Temperature. (Fahrenheit.)			Precip'n.		Stations.	Temperature. (Fahrenheit.)			Precip'n.
	Max.	Min.	Mean.				Max.	Min.	Mean.	
Alabama.	0	0	0	Ins.		Arkansas—Cont'd.	0	0	0	Ins.
Bermuda f.....	92	48*	72.3	3.14		Lead Hill.....	94	40	68.2	4.33
Butler f.....	92	44	72.3	2.78		Little Rock B'ks.....	94	49	72.2	6.86
Citronelle f.....	100	49	79.4	7.97		Lonoke.....	90	53	73.2	3.25
Columbiana f.....	94	42	72.3	4.84		Monticello f.....	94	50	74.0	2.40
Decatur (1) f.....	94	42	69.5	8.86		Newport (1) f.....	94	46	69.3	5.14
Decatur (2) f.....	90	42	68.9	8.83		Oseola f.....	92	46	67.1	3.80
Elkton f.....	96	46	74.4	2.38		Ozone f.....	82	44	65.8	8.08
Eufaula f.....	95	45	75.0	4.32		Pine Bluff f.....	92	50	72.8	0.21*
Evergreen f.....	91	44	70.7	3.80		Russellville f.....	88	52	71.3	0.38*
Fayette C. H. f.....	95	47	75.0	4.43		Stuttgart f.....	93	48	70.8	6.14
Fort Deposit f.....	96	52	74.8	1.91		Stuttgart f.....	92	44	70.2	1.94
Greensborough f.....	92h	47h	71.4h	1.22		Texarkana f.....	94	52	74.8	4.08
Livingston (1) f.....	94	44	76.6	0.57		Washington f.....	90	49	71.9	3.53
Livingston (2) f.....	92	44	71.6	2.57		Windsor f.....	83	36	65.0	7.15
Marion f.....	91*	45	75.0	6.38		British Columbia.				
Motest f.....	92	48	74.0	4.21		New Westminster.....	79	40	56.7	3.69
Mount Willing f.....	98h	47	75.2d	6.36		California.				
Mt. Vernon B'ks.....	92	40	72.6	0.67		Alameda.....	106	60	80.5	0.00
Pine Apple f.....	96	47	76.4	6.00		Alcatraz Island.....	88	51	59.9	0.00
Selma (1) f.....	92	44	76.0	1.89		Almaden.....	97	52	71.3	0.00
Tusculum f.....	92	44	68.2	5.32		American Hill f.....	98	48	67.0	0.00
Tusculum (1) f.....	90	47	69.4	3.09		Annaheim f.....	102	60	76.2	0.76
Tusculum (2) f.....	95	48	73.0	2.53		Anderson f.....	103	47	76.2	0.00
Union Springs.....	94	43	75.8	0.20		Angel Island.....	95	50	65.0	0.00
Uniontown.....	89	36	66.2	6.44		Aplos f.....	86	48	62.9	0.00
Valley Head f.....	99	55	80.4	4.39		Athlone.....	108	55	77.9	0.00
Wiggins.....						Auburn.....	98	40	71.9	0.00
Arizona.						Bakersfield.....	98	63	79.3	0.00
American Flag.....				3.15		Barstow.....	104	46	75.8	0.07
Arizona Dam.....				1.00		Beaumont.....	98	60	77.3	0.00
Ash Creek.....				0.65		Belmont.....	95	55	69.5	0.00
Banghart's.....				0.40		Bonita Barracks.....	100	51	70.2	0.00
Benson f.....	95	54	76.7	1.04		Berkeley.....	106	61	77.9	0.00
Bisbee.....				3.79		Bishop Creek.....	87	48	62.5	0.00
Buckeye.....				2.51		Boulder Creek.....	102	55	76.7	0.00
Calabasas.....				0.50		Brentwood.....	100	39	65.7	0.00
Casa Grande.....	109	68	84.7	0.60		Brighton.....	100	58	72.6	0.00
Chloride.....				1.71		Byron.....	106	58	75.2	0.00
Clifton.....				1.46		Cactus.....	102	58	75.9	0.10
Cottonwood.....				1.10		Calistoga.....	110	78	91.3	0.00
Crittenden.....				1.70		Castroville.....	97	38	67.4	0.00
Dos Cabezas.....				0.58		Centerville.....	84	46	63.5	0.00
Dragoon.....				0.18		Chico.....	104	56	71.6	0.00
Duncan.....				1.27		Cisco.....	103	53	77.9	0.00
Flagstaff.....	85	31	57.5	1.19		Colgrove.....	82	39	59.4	0.00
Florence.....	99	51	77.1	0.34		Colfax.....	97	54	72.6	0.00
Fort Apache.....	90	32	65.0	0.89		Colton.....	102	58	76.0	0.04
Fort Bowie.....	92	39	67.1	2.79		Corning.....	109	54	77.6	0.00
Fort Huachuca.....	92	35	76.3	3.32		Crescent City.....	107	54	76.5	0.00
Fort Lowell.....	101	45	81.4	0.60		Davisville.....	106	64	82.3	0.00
Fort McDowell.....	108	55	82.7	0.00		Delano.....	106	64	82.3	0.84
Fort Mojave.....	113	58	87.1	0.69		Downey.....	96	56	72.4	0.00
Fort Verde.....	99	38	71.8	0.00		Dunnigan.....	99	60	74.8	0.00
Gila Bend.....	100	64	83.6	0.00		Edgewood.....	85	36	59.9	0.00
Globe.....	100	46	72.5	5.90		El Dorado.....	101	50	71.1	0.00
Holbrook.....	92	37	69.6	0.67		Elmira.....	105	54	75.1	0.00
Lochiel.....	88	46	65.6	2.17		El Verano.....	102	45	67.0	0.00
Mariopu.....	98	65	63.6	0.48		Emigrant Gap.....	87	44	64.1	0.00
Mayer.....				0.65		Esperanza.....	108	52	78.8	0.00
Mesa City.....				0.63		Evergreen.....				0.00
Mineral Park.....				3.04		Farmington.....	105	53	74.9	0.00
Mount Huachuca.....	93	43	69.6	0.05		Felton.....	102	36	75.5	0.00
New River.....	103	48	78.2	1.71		Flournoe.....	98	57	76.8	0.00
Oro.....				2.52		Folsom.....	103	56	76.8	0.00
Pantano.....	98	54	70.5	1.05		Fort Bidwell.....	90	32	60.7	0.00
Peoria.....	108	50	82.0	1.04		Fort Gaston.....	95	29	66.5	0.00
Pinedale.....				0.85		Fort Mason.....	85	47	56.8	0.00
Red Rock.....				0.10		Georgetown.....	94	44	71.0	0.00
Saint John's.....	107	46	76.9	2.13		Gilroy.....	102	48	67.8	0.00
San Carlos.....	105	51	74.7	3.10		Girard.....	95	48	69.2	0.40
San Simon.....	95	36	68.4	1.15		Goshen.....	104	56	75.7	0.00
Seligman.....				0.42		Grass Valley.....	101	48	69.6	0.00
Show Low.....	103	55	80.6	0.97		Hollister.....	98	38	66.0	0.35
Signal.....				1.12		Hornbrook.....	86	33	58.6	0.00
Silver King.....				3.50		Hydesville f.....	100	45	72.2	0.00
Simmons.....				2.30		Ione.....	95	54	72.1	0.00
Stanton.....				0.26		Iowa Hill.....	107	51	76.7	0.00
Strawberry.....				2.84		Juliant.....	91	52	66.7	0.08
Teviston.....				0.30		Keeler.....	95	53	73.8	0.42
Texas Hill.....	112	71	86.2	3.12		Keeno.....	98	55	71.5	0.00
Tip Top.....				0.06		King City.....	102	38	72.0	0.00
Tres Amos.....				2.79		Kingsburgh.....	104	54	77.8	0.00
Tula City.....	100	53f	77.7d	4.13		Knight's Landing.....	98	50	76.1	0.00
Tucson (1).....	100	50	73.5	0.92		La Grange.....	105	47	76.0	0.00
Walnut Grove.....	81	30	50.2	0.31		Lathrop.....	104	50	71.6	0.00
Wilcox.....	92	46	70.6	1.41		Laurel.....	99	50	69.7	0.00
Williams.....	92	46	70.6	0.00		Lemoore.....	99	57	75.1	0.00
Willow Springs.....	102	70	84.2	2.07		Livermore.....	98	48	68.0	0.00
Winslow.....				6.84		Livingston.....	108	52	76.5	0.00
Wood Canon.....				4.78		Long Beach.....	96	59	73.1	0.00
Yuma.....				3.30		Los Angeles.....	100	57	72.5	0.00
Arkansas.				1.83		Los Gatos.....	100	49	72.1	0.00
Arkansas City f.....	88	53	72.0	2.82		Mammoth Tank.....	108	73	88.6	0.00
Camden f.....	91	47	69.5	5.22		Martinez.....	100	46	68.4	0.00
Conway.....	94	40	69.4	3.78		Marysville.....	99	60	82.6	0.00
Deval's Bluff f.....	87	48	70.3	3.50		Merced.....	90	48	66.3	0.00
El Dorado f.....	90	46	70.3	6.50		Modesto.....	106	52	75.3	0.00
Forrest City.....						Mojave.....	103	55	77.0	0.27
Fulton.....										
Helena (1) f.....	94	46	70.8							
Helena (2) f.....	94	46	70.8							
Hot Springs.....	93	50	74.7							